

S2AP Scaler Board

Powerful graphics processing board, providing high-quality images for TFT panels. S2AP Scaler Board supports V-by-One panels up to 4K2K UHD (3840x2160) and can be used in a variety of systems.

User Manual / Engineering Spec.

Version 1.0

Winmate Communication Inc.

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S2AP User Guide

Version: 1.0

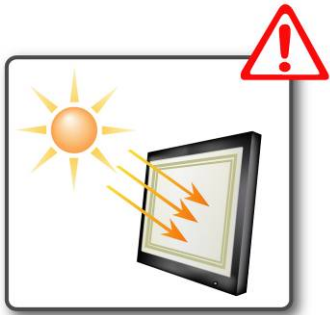
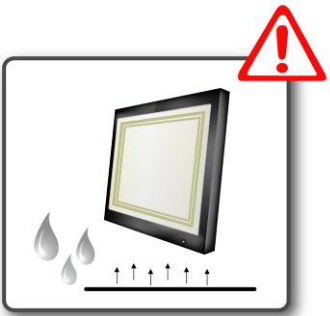
REVISION HISTORY

<i>REVISION</i>	<i>AUTHOR</i>	<i>DATE</i>	<i>DESCRIPTION</i>
0.1	Michael Lee	11/19/2014	Draft
0.2	Michael Lee	01/15/2015	Adding pin definition
1.0	Eric	01/22/2015	First Release

IMPORTANT SAFETY INSTRUCTIONS

1. Please read these instructions carefully before using the product and save for later reference.
2. Follow all warnings and instructions marked on the product.
3. Unplug this product from the wall outlet before cleaning. Clean the product with a damp soft cloth. Do not use liquid or aerosol cleaners as it may cause permanent damage to the screen.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand, or table.
The product may fall, causing serious damage to the product.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered.
The openings should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. This product is equipped with a 3-wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet.
Do not defeat the purpose of the grounding-type plug.
9. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
10. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating. Also make sure that the total of all products plugged into the wall outlet does not exceed 15 amps.
11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
12. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks and will void the warranty. Refer all servicing to qualified service personnel.
13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - When the power cord or plug is damaged or frayed.
 - If liquid has been spilled into the product.

- If the product has been exposed to rain or water.
- If the product does not operate normally when the operating instructions are followed.
Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
- If the product has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance, indicating a need for service.
- If the option module is in installation (the module is still not plugged into the slot)

CAUTION		
Read manual prior to installing the product. The operation of products depends on you reading and following the information in this manual. Re-check your work prior to operating the product.		
EVENT	EFFECT	PREVENTION
	Sunlight shines directly will cause the panel damage.	You should avoid placing the product under direct sunlight.
	If the product is close to the wet ground such as grassplot, the moisture between panel and glass will make the product malfunction.	You should avoid placing the product in wet environment.

Contents

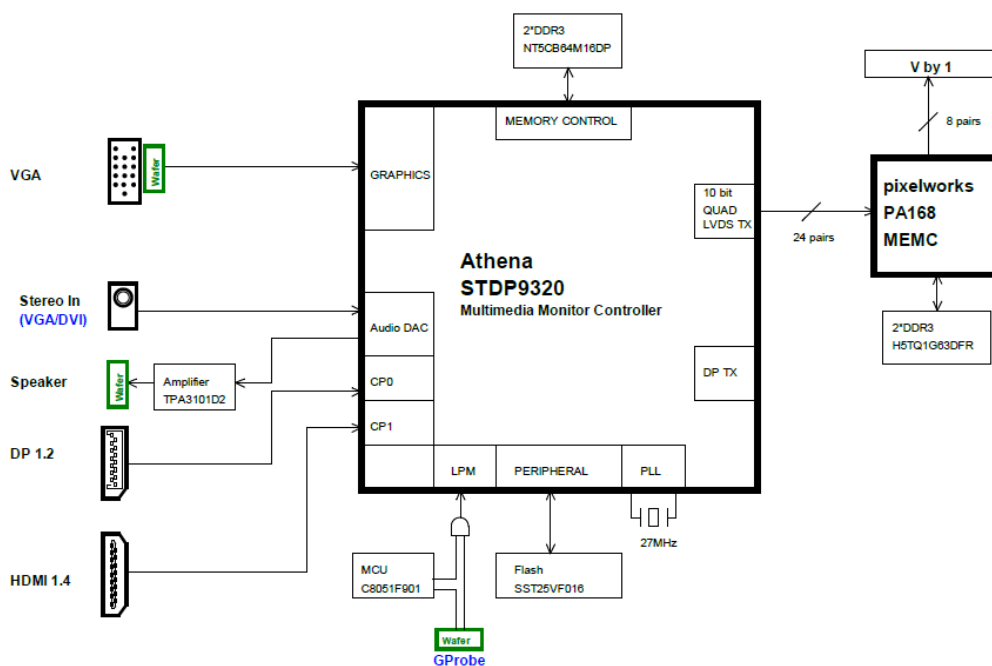
1. INTRODUCTION	5
1.1. ABOUT THE PRODUCT	5
1.2. BLOCK CHART	5
1.3. NOTICE.....	5
1.4. CHECK LIST	6
2. REMOTE CONTROL	7
2.1. INSTALL BATTERY IN THE REMOTE CONTROL	7
2.2. REMOTE CONTROL KEY DEFINITIONS.....	7
3. INPUT SIGNALS OVERVIEW	8
3.1. POWER & SIGNAL CONNECTIONS.....	8
4. CONNECTORS AND PIN ASSIGNMENT	9
4.1 A/D BOARD I/O & CONNECTOR	9
4.2 I/O & CONNECTOR PIN DEFINITION	11
4.3 POWER CONSUMPTION	20
5. USING THE LCD MONITOR.....	20
5.1 OSD KEY DEFINITION.....	20
5.2 OSD HOT KEYS (AUTO).....	21
5.3 OSD MENU NAVIGATION.....	22
6. CLEANING THE MONITOR.....	26
7. DISCLAIMER	26
8. TROUBLESHOOTING	26
APPENDIX B: USING RS-232 COMMAND CODE TO SET SYSTEM (OPTIONAL)	29
APPENDIX C : USING RS-232 COMMAND CODE TO CHECK SYSTEM STATUS (OPTIONAL)	30

1. Introduction

1.1. About the Product

This product is a high quality TFT LCD panel control Board. S2AP is designed for 4K2K Ultra high resolution panel. It's designed to meet the demanding performance requirements of today's business and industrial applications.

1.2. Block Chart



1.3. Notice

- Do not touch the LCD panel surface with sharp or hard objects.
- Do not use abrasive cleaners, waxes or solvents for cleaning, use only a dry or damp, soft cloth.
- Use only with a high quality, safety-approved, AC/DC power adapter.

1.4. Check List

Before using this monitor, please make sure that all the items listed below are present in your package

1. VGA cable	x1
2. AC to DC adapter	x1
3. Power cord	x1
4. User manual	x1
5. 3.5mm Audio cable (optional)	x1
6. HDMI cable (optional)	x1
7. Display Port cable (optional)	x1
8. Remote controller(optional)	x1

If any items are missing or damaged, please contact your dealer immediately.

2. Remote Control

2.1. Install Battery in the Remote Control

Insert two AAA Alkaline batteries and match the (+) and (-) on battery to the marks inside the battery compartment.

Service life of battery:

1. The battery normally last for about one year although this depends on how often and for what operations the remote control is used.
2. If the remote control unit fails to work even then it's operated near the player, please replace the battery.

2.2. Remote Control Key Definitions

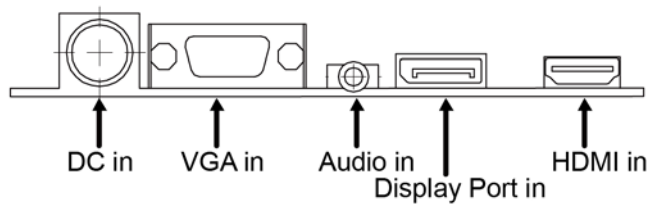


Key	Function	Description
	Power	Power on/off
	Auto	Auto Adjust
	Source	Switch input source
	Menu	Display OSD menu
	Volume	Adjust volume
	Exit	Return to the previous menu level
	Reset	Factory reset
	Scaling	Change the scaling mode to Fill or aspect
	Auto-color	perform Auto-Color Balance
	Mute	Mute
	Select	Navigating to Up/Down/Left/Right
	Enter	Execute

3. Input Signals Overview

The LCD output can be configured to use any of the available input formats (VGA, HDMI, and Display Port).

S2AP Monitor Connectors



3.1. Power & Signal Connections

3.1.1. Power:

Switch off the power on both your monitor and your computer.

The Power Switch is located at the rightmost button of the keypad.

3.1.2. Power cable connection:

Connect the power cord to the AC outlet, and connect the power to the monitor through the AC/DC adapter.

3.1.3. VGA cable connection:

Plug 15-pin VGA signal cable to the VGA connector in the rear of PC system, and plug the other end to the monitor.

Secure cable connectors with screws.

3.1.4. HDMI / Display Port cable connection

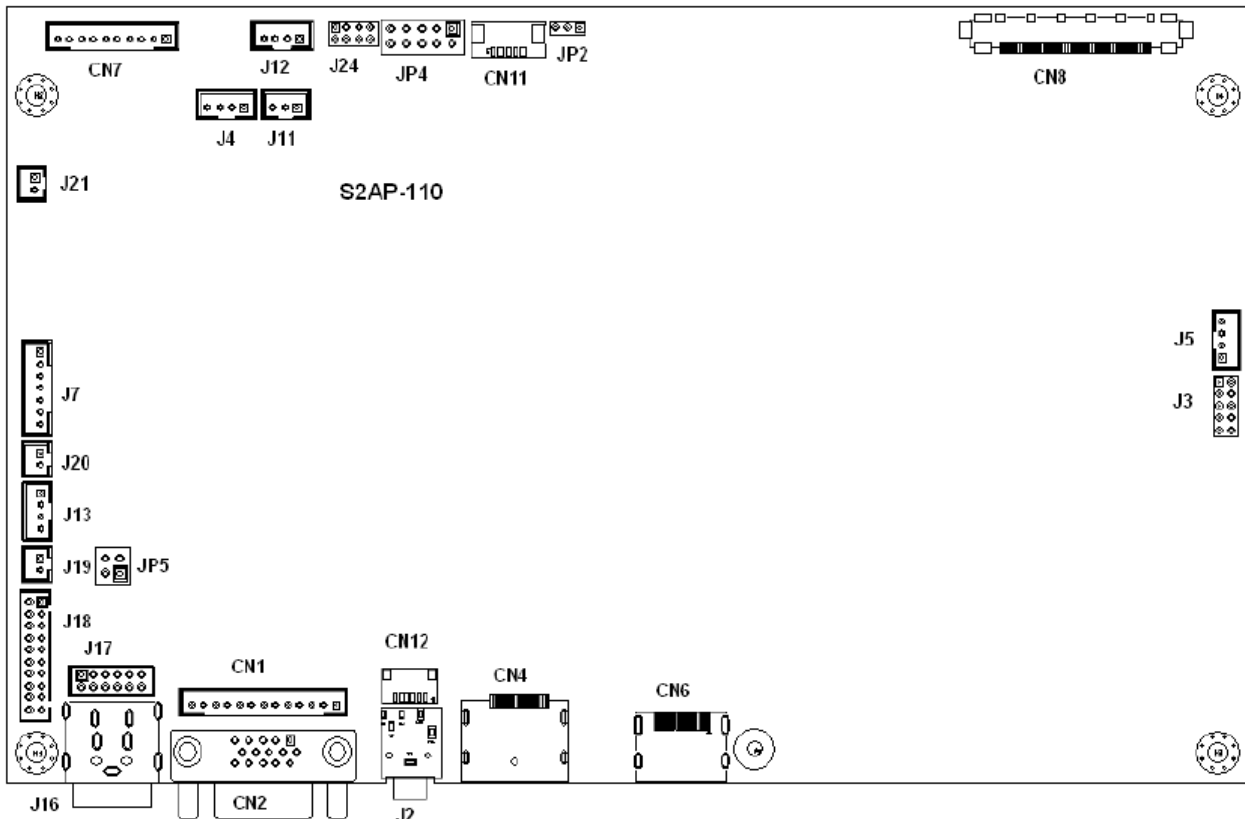
Plug the HDMI / Display Port signal cable to your PC or other devices, and plug the other end to the monitor.

3.1.5 RS232 cable connection (Optional):

You will be able to develop your own application software utilizing the built-in RS232 command code. The application software can send command from PC to LCD monitor via RS232 port to control LCD monitor. Please refer to Appendix B for built-in RS232 command code.

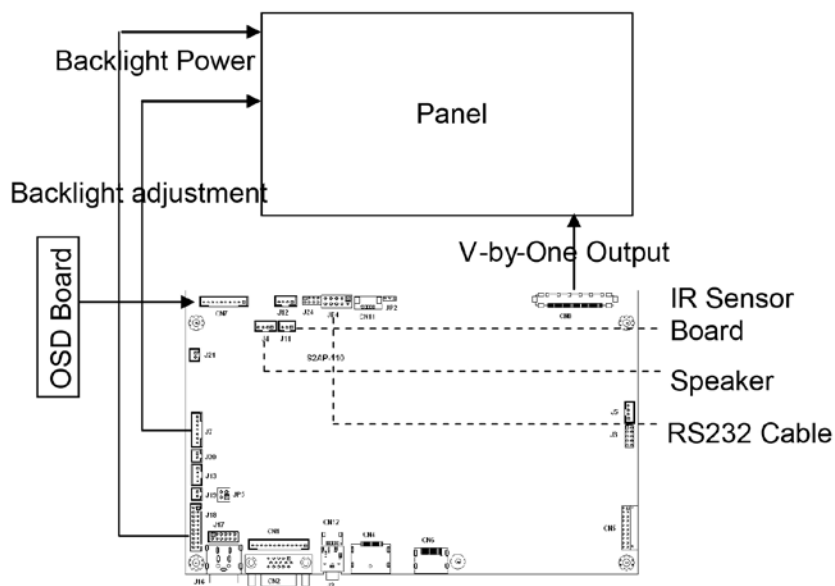
4. Connectors and Pin Assignment

4.1 A/D Board I/O & Connector



Connector	Description
J2	3.5mm Stereo Input
J3	Reserved FRC JTAG
J4	Speaker Output
J5	Reserved FRC I2C
J7	To Backlight Unit
J11	IR Sensor
J12	Reserved SoC I2C
J13	LPM Console Port
J16	Power Din 4 Pin Input
J17	Power Wafer Input

J18	Power Wafer Output
J19	12V/1A Output
J20	5V/1A Output
J21	3.3V/1A Output
J24	RS-232 Source Selector for SOC/FRC
CN1	VGA Wafer Input
CN2	VGA D-Sub Input
CN4	Display Port Input
CN6	HDMI Input
CN7	OSD Key pad
CN8	8 Lanes V by one Output
CN11	MCU ISP Port
CN12	Stereo Line Output
JP2	FRC bootstrap
JP4	3-Wire RS-232
JP5	24V/12V Selector for Power Input



4.2 I/O & Connector Pin Definition

3.5 Ø Stereo Input (J2)

Used connector: WTJ-035-36B-01 3.5 ϕ

Pin No.	Name
1	GND
2	VGA_R
3	VGA_L
4	NC
5	NC
6	NC

Reserved FRC JTAG (J3)

Used connector: Pin Header 2*5p P:2.0mm DIP 180°

Pin No.	Name
1	GND
2	TCK
3	V33_A (+3.3V output)
4	TDO
5	RST_N
6	TMS
7	NC
8	TRST
9	GND
10	TDI

Speaker Output (J4)

Connector Type: JST-B4B-PH-K-S or equivalent.

Pin No.	Name
1	LOUT+
2	LOUT-
3	ROUT-
4	ROUT+

Reserved FRC I2C (J5)

Connector Type: JST-B4B-PH-K-S or equivalent.

Pin No.	Name
1	GND
2	SCL
3	SDA
4	NC

To Backlight Unit (J7)

Used connector: JST-B7B-PH-K-S or equivalent.

Pin No.	Description
1	+12V
2	+12V
3	+12V
4	GND
5	ADJ
6	GND
7	ON/OFF

IR Sensor (J11)

Used connector: JST-B3B-PH-K-S or equivalent.

Pin No.	Description
1	IR
2	GND
3	+5V

Reserved SoC IIC (J12)

Connector Type: JST-B4B-PH-K-S or equivalent.

Pin No.	Name
1	+3.3V_LPM
2	LPM_MSTR_SDA
3	LPM_MSTR_SCL
4	GND

Power Din 4 Pin Input (J16)

Used connector: Power Jack Din 4p dip Quick Lock

Pin No.	Description
1	+12V/+24V
2	Ground
3	+12V/+24V
4	Ground

Power Wafer Input (J17)

Connector Type: 2.0mm 2 x 6 Pin Header DIP180 degree

Pin No.	Description
1	+12V/+24V
2	+12V/+24V
3	+12V/+24V
4	+12V/+24V
5	+12V/+24V
6	+12V/+24V
7	GND
8	GND
9	GND
10	GND
11	GND
12	GND

Power Wafer Output (J18)

Connector Type: JST-B20B-PHDSS or equivalent.

Pin No.	Description
1	+12V/+24V
2	+12V/+24V
3	+12V/+24V
4	+12V/+24V
5	+12V/+24V
6	+12V/+24V
7	+12V/+24V
8	+12V/+24V
9	+12V/+24V
10	+12V/+24V

11	GND
12	GND
13	GND
14	GND
15	GND
16	GND
17	GND
18	GND
19	GND
20	GND

12V/1A Output (J19)

Used connector: JST-B2B-PH-K-S or equivalent.

Pin No.	Description
1	+12V
2	GND

5V/1A Output (J20)

Used connector: JST-B2B-PH-K-S or equivalent.

Pin No.	Description
1	+5V
2	GND

3.3V/1A Output (J21)

Used connector: JST-B2B-PH-K-S or equivalent.

Pin No.	Description
1	+3.3V
2	GND

RS-232 Source Selector for SOC/FRC (J24)

Used connector: Header 2*2p P:2.0mm DIP 180°

Pin No.	Description
1,2	SoC RXD
3,4	SoC TXD
5,6	FRC RXD
7,8	FRC TXD

VGA Wafer Input(CN1)

Used connector: JST-B13B-PH-K-S or equivalent.

Related connector: JST-PHR-13 or equivalent I

Pin No.	Description
1	Red+
2	Red-
3	Green+
4	Green-
5	Blue+
6	Blue-
7	SDA
8	HS
9	VS
10	Cable Detect
11	SCL
12	GND
13	VGA 5V

VGA D-Sub Input (CN2)

Used connector: D-Sub 15p 3.08mm 90°(DIP)

Pin No.	Description
1	Red+
2	Green+
3	Blue+
4	NC
5	Cable Detect
6	Red-
7	Green-
8	Blue-
9	VGA5V
10	GND
11	NC
12	SDA
13	HS
14	VS
15	SCL

Display Port Input (CN4)

Used connector: 3VD51203-D7JJ-7H

Pin No.	Description
1	DPRX_L3N
2	GND
3	DPRX_L3P
4	DPRX_L2N
5	GND
6	DPRX_L2P
7	DPRX_L1N
8	GND
9	DPRX_L1P
10	DPRX_L0N
11	GND
12	DPRX_L0P
13	Pull Down
14	Pull Down
15	DPRX_AUXP
16	GND
17	DPRX_AUXN
18	DPRX_HotPlug
19	DPRX_PWR return
20	DPRX_PWR

HDMI Input (CN6)

Used connector: U7211-19P-110R/SMD+DIP

Pin No.	Description
1	HDMI_RX2+
2	GND
3	HDMI_RX2-
4	HDMI_RX1+
5	GND
6	HDMI_RX1-
7	HDMI_RX0+
8	GND
9	HDMI_RX0-
10	HDMI_RXC+

11	GND
12	HDMI_RXC-
13	HDMI_CON_CEC
14	NC
15	HDMI_CON_SCL
16	HDMI_CON_SDA
17	HDMI_CON_CABLE
18	+5V_HDMI
19	HDMI_CON_HP

OSD Key Pad (CN7)

Used connector: JST-B10B-PH-K-S or equivalent.

Related connector: JST-PHR-10 or equivalent

Pin No.	Description
1	GREEN_LED
2	+3.3V
3	NC
4	GPADC_AIN1
5	ADC2_RETURN
6	ADC_VREF
7	ADC1_RETURN
8	GPADC_AIN0
9	LED_AMBER
10	GND

8 Lanes V by One Output (CN8)

Used connector: Hirose-DF13DP-1.25V

Pin No.	Symbol	Description
1	PNL_PWR	Power output (+12V)
2	PNL_PWR	Power output (+12V)
3	PNL_PWR	Power output (+12V)
4	PNL_PWR	Power output (+12V)
5	PNL_PWR	Power output (+12V)
6	PNL_PWR	Power output (+12V)
7	PNL_PWR	Power output (+12V)
8	PNL_PWR	Power output (+12V)
9	NC	No Connection
10	GND	Ground
11	GND	Ground

12	GND	Ground
13	GND	Ground
14	GND	Ground
15	LRI	Input signal for Glasses Left Right signal
16	LR	Output signal for Left/Right synchronous signal
17	2D3D	2D/3D Enable
18	SDA	I2C Data signal
19	SCL	I2C Clock signal
20	NC	No Connection
21	NC	No Connection
22	LD_EN	Local Dimming Mode Enable
23	NC	No Connection
24	NC	No Connection
25	HTPDN	Hot plug detect input
26	LOCKN	Lock detect input
27	GND	Ground
28	TX0N	Negative V-by-One differential data output Lane 0
29	TX0P	Positive V-by-One differential data output Lane 0
30	GND	Ground
31	TX1N	Negative V-by-One differential data output Lane 1
32	TX1P	Positive V-by-One differential data output Lane 1
33	GND	Ground
34	TX2N	Negative V-by-One differential data output Lane 2
35	TX2P	Positive V-by-One differential data output Lane 2
36	GND	Ground
37	TX3N	Negative V-by-One differential data output Lane 3
38	TX3P	Positive V-by-One differential data output Lane 3
39	GND	Ground
40	TX4N	Negative V-by-One differential data output Lane 4
41	TX4P	Positive V-by-One differential data output Lane 4
42	GND	Ground
43	TX5N	Negative V-by-One differential data output Lane 5
44	TX5P	Positive V-by-One differential data output Lane 5
45	GND	Ground
46	TX6N	Negative V-by-One differential data output Lane 6
47	TX6P	Positive V-by-One differential data output Lane 6
48	GND	Ground
49	TX7N	Negative V-by-One differential data output Lane 7
50	TX7P	Positive V-by-One differential data output Lane 7
51	GND	Ground

8051 ISP Port (CN11)

Used connector: Wafer 5p P:1.25mm SMD 180° white

Pin No.	Description
1	+3.3V

2	C2D
3	C2CK
4	#RESET
5	GND

Stereo Line Output (CN12)

Used connector: Wafer 6p P:1.0mm SMD 180° white

Pin No.	Description
1	LINEOUT_DET
2	AUD_R1_OUT
3	RINP
4	LINP
5	AUD_L1_OUT
6	GND

FRC Bootstrap(JP2)

Used connector: Header 1*3p P:2.0mm DIP 180°

Pin No.	Description
1-2	Pull up to 3.3V
2-3	Pull down to GND

3-Wire RS-232 (JP4)

Connector Type: 2*5p P:2.54mm DIP 90° L10*H6m

Pin No.	Description	Pin No.	Description
1	NC	6	NC
2	NC	7	NC
3	RS-232 TX	8	NC
4	NC	9	GND
5	RS-232 RX	10	NC

24V/12V Selector for Power Input (JP5)

Used connector: Header 2*2p P:2.54mm DIP 180°

Pin No.	Description
1-2	12V
3-4	24V

4.3 Power Consumption

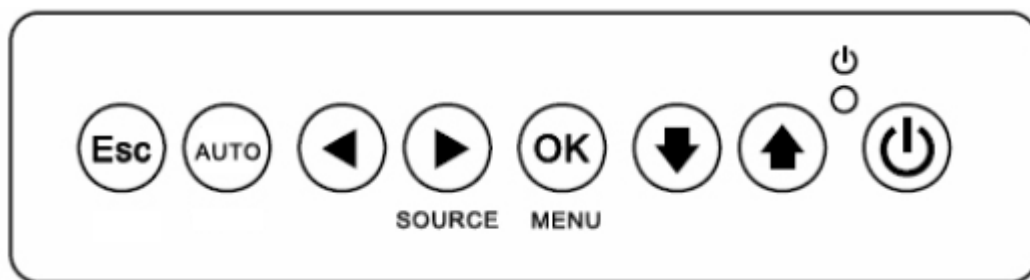
Parameter	Min.	Typ.	Max.	Unit.	Remark
Operating Mode	-	8	12	Watt	
Standby Mode	-	2.5	-	Watt	
Off Mode	-	-	0.2	Watt	

5. Using the LCD Monitor

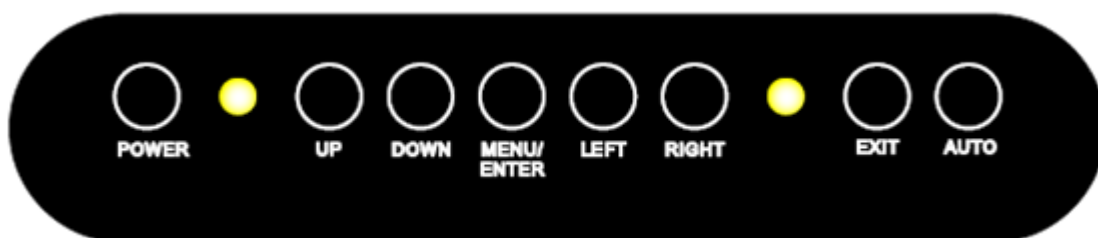
5.1 OSD Key Definition

There are two types OSD keypad for S2AP board, the type of OSD is according to the housing of the LCD monitor. Type B is standard OSD keypad for kit.

Type A.



Type B



a. POWER

Initiates power-up sequence from low power mode or enters low power mode from normal operation.

b. AUTO

Perform Auto Adjustment

c. Esc (EXIT)

- i. When OSD is enabled, it returns to the previous menu level or closes the OSD.

d. **OK/MENU (ENTER)**

- i. When OSD is disabled, it displays the OSD Main Menu.
- ii. When OSD is enabled, it confirms a selection.

e. **LEFT** ◀

Moves left in the menu or bar

f. **RIGHT** ▶

Moves right in the menu or bar

g. **UP** ▲

- i. Selects the previous item in the Menu.

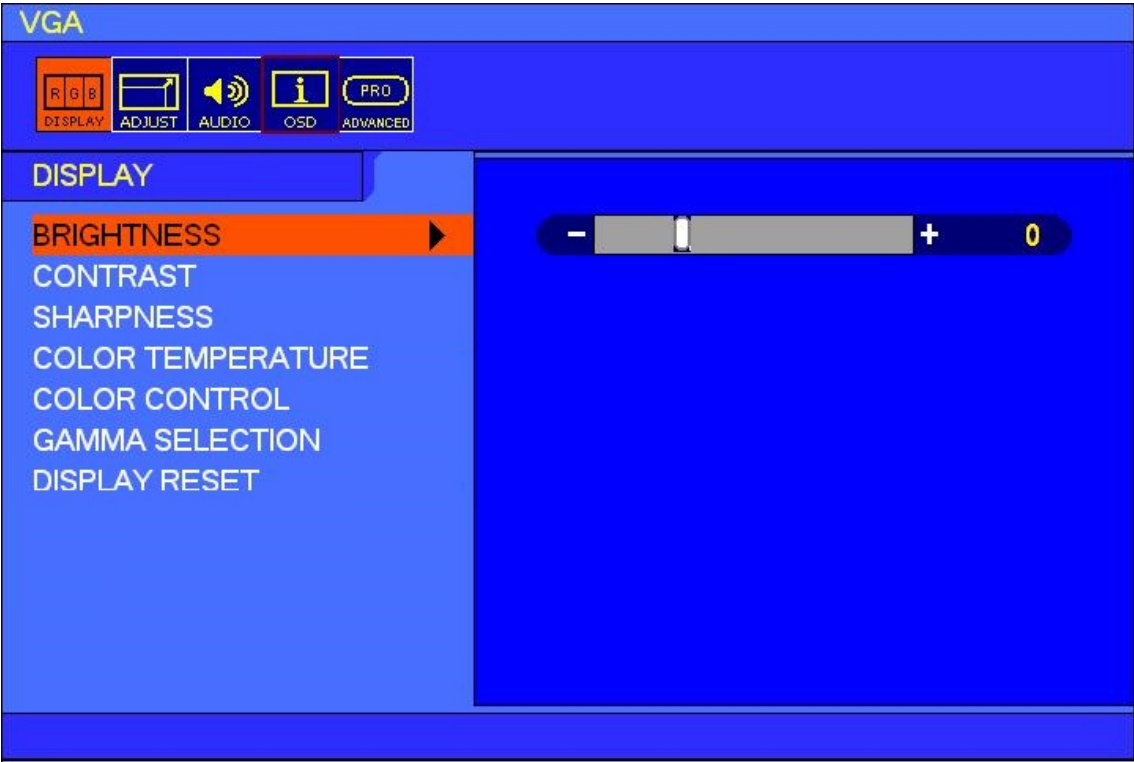
h. **DOWN** ▼

- i. Selects the next item in the Menu.

5.2 OSD Hot Keys (Auto)

Function	Hot Key
Main source	Press "▶" to select the main source
Volume	Press "◀" to the volume bar, and press "◀" "▶" to adjust the volume
Auto adjustment	Press "AUTO" to perform auto adjustment

5.3 OSD Menu Navigation



OSD menu navigation

5.3.1 Display

OSD icon	Sub menu	Settings	Note
	BRIGHTNESS	slider bar	
	Adjusts the overall image and background brightness. Press “◀” or “▶” to adjust.		
	CONTRAST	slider bar	
	Adjusts the image brightness in relationship to the background. Press “◀” or “▶” to adjust.		
	SHARPNESS	slider bar	
	Adjusts the crispness of the image. Press “◀” or “▶” to adjust.		
	ADC BRIGHTNESS *VGA CHANNEL ONLY	slider bar	
	Adjusts the ADC brightness. Press “◀” or “▶” to adjust.		
	COLOR TEMPERATURE	USER/6500K/9300K	
	Adjusts the color temperature of the entire screen. A low color temperature will make the screen		

	reddish. A high color temperature will make the screen bluish.		
	COLOR CONTROL	R slider bar	
		G slider bar	
		B slider bar	
	Adjusts the levels of the Red, Green, Blue, Yellow, magenta, and cyan. Press “◀” or “▶” to adjust.		
	GAMMA SELECTION	@NATIVE	
		@1.8	
		@2.2	
	Select a display gamma value for best picture quality.		
	DISPLAY RESET	YES/NO	
	Resets the following settings within the DISPLAY menu back to factory setting:		

5.3.2 Adjust

	AUTO SETUP	PRESS YES TO AUTO SETUP	
	*VGA CHANNEL ONLY		
	Automatically adjusts screen size, H position, V position, Clock, Clock Phase		
	AUTO ADJUSTMENT	ON/OFF	
	*VGA CHANNEL ONLY		
	H Position, V Position and Clock Phase are adjusted automatically upon power On.		
	H POSITION	slider bar	
	*VGA CHANNEL ONLY		
	Controls the horizontal position of the image within the Display area of the LCD. Press + to move right. Press - to move left.		
	V POSITION	slider bar	
	*VGA CHANNEL ONLY		
	Controls the vertical position of the image within the Display area of the LCD. Press + to move up. Press - to move down.		
	CLOCK	slider bar	
	*VGA CHANNEL ONLY		
	Press + to expand the width of the image on the right of the screen. Press - to narrow the width of the image on the left.		
	PHASE	slider bar	
	*VGA CHANNEL ONLY		
	Adjusts the visual "noise" on the image.		
	WHITE BALANCE	YES/OFF	
	*VGA CHANNEL ONLY		
	Perform the white balance		
	SCALING	@ ASPECT	
		@ FULL	
	Adjust the image scaling setting		
	ADJUST RESET	YES/NO	
	Resets the following settings within the ADJUST menu back to factory setting:		

5.3.3 Audio

	VOLUME	Slider bar	
	MUTE	ON/OFF	
	AUDIO RESET	YES/NO	
	Resets "AUDIO" settings back to factory settings.		

5.3.4 OSD settings

	OSD TURN OFF	slider bar	
	Turns off the OSD after a period of inactivity. The preset options are 0-60 seconds.		
	OSD TRANSPARENCY	@OFF	
		@TYPE1	
		@TYPE2	
	Set the transparency level of OSD		
	MONITOR INFORMATION	Version	
		Panel Resolution	
		Main Resolution	
	Show BIOS version & resolution info.		
	OSD RESET	YES/NO	
	Resets the following settings within the OSD menu back to factory setting		

5.3.6 Advanced settings

	CHANNEL SELECT	VGA	
		HDMI	
		DP	
	Select the input signal source		
	BRIGHTNESS MIN	Slide bar	
	ADVANCED RESET	YES/NO	
	Resets the following settings within the ADVANCED menu back to factory setting		
	FACTORY RESET	YES/NO	
	Resets OSD options back to factory settings EXCEPT FOR: CHANGE SECURITY PASSWORD and SECURITY PASSWORD.		

6. Cleaning the Monitor

1. Make sure the monitor is turned off.
2. Never spray or pour any liquid directly on the screen or case.
3. Wipe the screen with a clean, soft, lint-free cloth. This removes dust and other particles.
4. The display area is highly prone to scratching. Do not use ketone type material (ex. Acetone), Ethyl alcohol, toluene, ethyl acid or Methyl chloride to clear the panel. It may permanently damage the panel and void the warranty.
5. If it is still not clean enough, apply a small amount of non-ammonia, non-alcohol based glass cleaner onto a clean, soft, lint-free cloth, and then wipe the screen.
6. Don't use water or oil directly on the monitor. If droplets are allowed to drop on the monitor permanent staining or discoloration may occur.

7. Disclaimer

We do not recommend using any ammonia or alcohol-based cleaners on the monitor screen or case. Some chemical cleaners or solvents have been reported to damage the screen and/or case of the monitor. Seller will not be liable for damage resulting from the use of any ammonia or alcohol-based cleaner.

8. Troubleshooting

If your monitor fails to operate correctly, consult the following chart for possible solution before calling for repairs:

Condition	Check Point
1. The picture does not appear	• Check if the signal cable is firmly seated in the socket. • Check if the Power is ON at the computer • Check if the brightness control is at the appropriate position, not at the minimum.
2. The screen is not synchronized	• Check if the signal cable is installed firmly. • Check if the output level matches the input level of your computer. • Make sure the signal timings of the computer system are within the specification of the monitor.

	• If your computer was working with a CRT monitor, you should check the current signal timing and turn off your computer before you connect the VGA Cable to this monitor.
3. The position of the screen is not in the center	• Adjust the H-position, and V-position, or Perform the Auto adjustment.
4. The screen is too bright or too dark	• Check if the brightness or contrast control is at the appropriate position, not at the Maximum (Minimum).
5. The screen is shaking or waving	• Perform the Auto adjustment. • Moving all objects which emit a magnetic field such as motor or transformer, away from the monitor. • Check if the specific voltage is applied. • Check if the signal timing of the computer system is within the specification of monitor.

If you are unable to correct the fault by using this chart, stop using your monitor and contact your distributor or dealer for further assistance.

Appendix A: Supported Modes (Depend on the monitor native resolution)

VGA / HDMI / DP (HDMI / DP support 60 Hz Only)

No.	Resolution	Frequency (Hz)	Note
1	640x350	70	IBM
2	640x350	85	VESA
3	640x400	56	-
4	640x400	70	IBM
5	640x480	75	VESA
6	640x480	80	VESA
7	720x350	70	IBM
8	720x400	70	IBM
9	720x400	85	VESA
10	800x600	56	VESA
11	800x600	60	VESA
12	800x600	72	VESA
13	800x600	75	VESA
14	800x600	85	VESA
15	1024x768	60	VESA
16	1024x768	70	VESA
17	1024x768	72	IBM
18	1024x768	75	VESA
19	1024x768	85	VESA

No.	Resolution	Frequency (Hz)	Note
20	1280x768	60	VESA
21	1280x800	60	VESA
22	1280x960	85	VESA
23	1280x1024	60	VESA
24	1280x1024	67	IBM
25	1280x1024	70	NCD
26	1280x1024	72	HP
27	1280x1024	75	VESA
28	1280x1024	85	VESA
29	1360x768	60	VESA
30	1366x768	60	VESA
31	1440x900	60	VESA
32	1600x1200	60	VESA
33	1680x1050	60	VESA
34	1920x1200	60	CVT RB
35	1920x1080	60	VESA
36	2560x1440	60	No VGA Support
37	2560x1600	60	
38	3840x2160	30	

Video Mode

No.	Resolution
1	480P
2	576P
3	720P
4	1080P

Appendix B: Using RS-232 Command Code to set system (Optional)

Name	Length	Value	Comment
Message	variable		
Checksum	1	2's complement of sum of Length and Message	byte chksum = 0; for (i = 0; i < buffer_size; ++i) chksum += buf[i]; chksum = ~chksum + 1;

RS232 setting:

Baud Rate = 115200, Data Bits=8, Parity = None, Stop Bits=1

Function	Length	Command	ID	index	Value	checksum
Auto	0x05	0x40		0x01		
Recall	0x05	0x40		0x02		
WhiteBalance	0x05	0x40		0x03		
Main Input Source	0x05	0x40		0x04	0=VGA,7=HDMI, 8=DP	
Brightness	0x05	0x40		0x10	0x00-0x64	
Contrast	0x05	0x40		0x11	0x00-0x64	
Scaling	0x05	0x40		0x22	1=COSTOM, 2=Aspect	
Gamma	0x05	0x40		0x31	0=Off,1=1.8,2=2.2	
Color Temp	0x05	0x40		0x32	0=user,1=6500K,2=9300K	
Color-R	0x05	0x40		0x33	0x00-0xFF	
Color-G	0x05	0x40		0x34	0x00-0xFF	
Color-B	0x05	0x40		0x35	0x00-0xFF	
Volume	0x05	0x40		0x50	0x00-0x1F	
Mute	0x05	0x40		0x54	0=Mute On,1=Mute OFF	

Reply Value :

ACK	3 C F1	Transmission PASS
NSP	3 D F0	Transmission FAILED
NCK	3 B F2	Not support

Format : Length, Command, ID, index, Value, Checksum

Example : 0x06, 0x40, ID, 0x00, 0x01, Checksum => Power Off system.

Appendix C : Using RS-232 Command Code to check system status (optional)

Name	Length	Value	Comment
Message	variable		
Checksum	1	2's complement of sum of Length and Message	byte chksum = 0; for (l = 0; l < buffer_size; ++l) chksum += buf[i]; chksum = ~chksum + 1;

Command(Tx)						Acknowledgement(Rx)				
function	Length	Command	ID	index	checksum	Length	ID	index	Value	checksum
Main Input Source	0x04	0x30		0x04		0x04		0x04	0=VGA, 7=HDMI, 8=DP	
Brightness	0x04	0x30		0x10		0x04		0x10	0x00-0x64	
Contrast	0x04	0x30		0x11		0x04		0x11	0x00-0x64	
Scaling	0x04	0x30		0x22		0x04		0x22	1=FILL,2=Aspect	

Gamma	0x04	0x30		0x31		0x04		0x31	0=Off,1=1.8,2=2.2	
Color Temp	0x04	0x30		0x32		0x04		0x32	0=user,1=6500K,2=9300K	
Color-R	0x04	0x30		0x33		0x04		0x33	0x00-0xFF	
Color-G	0x04	0x30		0x34		0x04		0x34	0x00-0xFF	
Color-B	0x04	0x30		0x35		0x04		0x35	0x00-0xFF	
Volume	0x04	0x30		0x50		0x04		0x50	0x00-0x1F	
Mute	0x04	0x30		0x54		0x04		0x54	0=Mute On,1=Mute OFF	

Reply Value :

ACK	3 C F1	Transmission PASS
NSP	3 D F0	Transmission FAILED
NCK	3 B F2	Not support

Format : Length, Command, ID, index, Checksum / Length, ID, Index, Value, Checksum